Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended): A digital baseband (DBB) receiver for receiving and processing a wireless communication signal, the DBB receiver comprising:

(a) at least one demodulator which outputs analog real and imaginary signal components on real and imaginary signal paths, respectively, in response to receiving the communication signal;

(b) an analog to digital converter (ADC) coupled to the real and imaginary signal paths for receiving the analog real and imaginary signal components and outputting respective digital real and imaginary signal components; and

(c) a digital cross-talk compensation module in communication with the ADC, wherein the digital cross-talk compensation module receives the digital real and imaginary signal components, estimates ~~the~~ cross-talk interference on the real signal component resulting from energy from the imaginary signal component being induced into the real signal path, estimates cross-talk interference on the imaginary signal component resulting from energy from the real signal component being induced into the imaginary signal path ~~caused by each of the signal components~~, and outputs digital real and imaginary cross-talk compensated signal components.

2. (original): The DBB receiver of claim 1 wherein the digital cross-talk compensation module comprises:

(i) a real signal path for receiving the digital real signal component;

(ii) an imaginary signal path for receiving the digital imaginary signal component;

(iii) a first delay unit inserted in the real signal path, the first delay unit for receiving the digital real signal component and outputting the digital real signal component after a first predetermined delay period expires;

(iv) a second delay unit inserted in the imaginary signal path, the second delay unit for receiving the digital imaginary signal component and outputting the digital imaginary signal component after a second predetermined delay period expires;

(v) a first adder for adding a real cross-talk compensation signal to the delayed digital real signal component output by the first delay unit; and

(vi) a second adder for adding an imaginary cross-talk compensation signal to the delayed digital imaginary signal component output by the second delay unit.

3. (original): The DBB receiver of claim 2 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

4. (original): The DBB receiver of claim 1 wherein the digital cross-talk compensation module comprises:

(i) a real signal path for receiving the digital real signal component;

(ii) a delay unit coupled to the real signal path for receiving the digital real signal component and outputting the digital real signal component after a predetermined delay period expires;

(iii) an adder coupled to the real signal path and to the delay unit, the adder for adding a negative value of the digital real signal component to the delayed

digital real signal component output by the delay unit to generate a first resulting signal; and

(iv) a multiplier coupled to the adder for multiplying the first resulting signal with a compensation signal having a predetermined value (K_1) to generate a second resulting signal used for adjusting the digital real signal component to compensate for distortion due to the occurrence of cross-talk between the analog real and imaginary signal components.

5. (original): The DBB receiver of claim 4 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

6. (original): The DBB receiver of claim 1 wherein the digital cross-talk compensation module comprises:

(i) an imaginary signal path for receiving the digital imaginary signal component;

(ii) a delay unit coupled to the imaginary signal path for receivig the digital imaginary signal component and outputting the digital imaginary signal component after a predetermined delay period expires;

(iii) an adder, coupled to the imaginary signal path and to the first delay unit, the adder for adding a negative value of the digital imaginary signal component to the delayed digital imaginary signal component output by the delay unit to generate a first resulting signal; and

(iv) a multiplier coupled to the adder for multiplying the first resulting signal with a compensation signal having a predetermined value (K_2) to generate a second resulting signal used for adjusting the digital imaginary signal component to

compensate for distortion due to the occurrence of cross-talk between the analog real and imaginary signal components.

7. (original): The DBB receiver of claim 6 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

8. (currently amended): A wireless transmit/receive unit (WTRU) for receiving and processing a wireless communication signal, the WTRU comprising:

(a) a demodulator which outputs analog real and imaginary signal components on real and imaginary signal paths, respectively, in response to receiving the communication signal;

(b) an analog to digital converter (ADC) coupled to the real and imaginary signal paths for receiving the analog real and imaginary signal components and outputting respective digital real and imaginary signal components; and

(c) a digital cross-talk compensation module in communication with the ADC, wherein the digital cross-talk compensation module receives the digital real and imaginary signal components, estimates ~~the~~ cross-talk interference on the real signal component resulting from energy from the imaginary signal component being induced into the real signal path, estimates cross-talk interference on the imaginary signal component resulting from energy from the real signal component being induced into the imaginary signal path ~~caused by each of the signal components~~, and outputs digital real and imaginary cross-talk compensated signal components.

9. (original): The WTRU of claim 8 wherein the digital cross-talk compensation module comprises:

(i) a real signal path for receiving the digital real signal component;

(ii) an imaginary signal path for receiving the digital imaginary signal component;

(iii) a first delay unit inserted in the real signal path, the first delay unit for receiving the digital real signal component and outputting the digital real signal component after a first predetermined delay period expires;

(iv) a second delay unit inserted in the imaginary signal path, the second delay unit for receiving the digital imaginary signal component and outputting the digital imaginary signal component after a second predetermined delay period expires;

(v) a first adder for adding a real cross-talk compensation signal to the delayed digital real signal component output by the first delay unit; and

(vi) a second adder for adding an imaginary cross-talk compensation signal to the delayed digital imaginary signal component output by the second delay unit.

10. (original): The WTRU of claim 9 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

11. (original): The WTRU of claim 8 wherein the digital cross-talk compensation module comprises:

(i) a real signal path for receiving the digital real signal component;

(ii) a delay unit coupled to the real signal path for receiving the digital real signal component and outputting the digital real signal component after a predetermined delay period expires;

(iii) an adder coupled to the real signal path and to the delay unit, the adder for adding a negative value of the digital real signal component to the delayed

digital real signal component output by the delay unit to generate a first resulting signal; and

(iv) a multiplier coupled to the adder for multiplying the first resulting signal with a compensation signal having a predetermined value (K_1) to generate a second resulting signal used for adjusting the digital real signal component to compensate for distortion due to the occurrence of cross-talk between the analog real and imaginary signal components.

12. (original): The WTRU of claim 11 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

13. (original): The WTRU of claim 8 wherein the digital cross-talk compensation module comprises:

(i) an imaginary signal path for receiving the digital imaginary signal component;

(ii) a delay unit coupled to the imaginary signal path for receiving the digital imaginary signal component and outputting the digital imaginary signal component after a predetermined delay period expires;

(iii) an adder, coupled to the imaginary signal path and to the first delay unit, the adder for adding a negative value of the digital imaginary signal component to the delayed digital imaginary signal component output by the delay unit to generate a first resulting signal; and

(iv) a multiplier coupled to the adder for multiplying the first resulting signal with a compensation signal having a predetermined value (K_2) to generate a second resulting signal used for adjusting the digital imaginary signal component to

compensate for distortion due to the occurrence of cross-talk between the analog real and imaginary signal components.

14. (original): The WTRU of claim 13 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

15. (currently amended): An integrated circuit (IC) for receiving and processing a wireless communication signal, the IC comprising:

(a) a demodulator which outputs analog real and imaginary signal components on real and imaginary signal paths, respectively, in response to receiving the communication signal;

(b) an analog to digital converter (ADC) coupled to the real and imaginary signal paths for receiving the analog real and imaginary signal components and outputting respective digital real and imaginary signal components; and

(c) a digital cross-talk compensation module in communication with the ADC, wherein the digital cross-talk compensation module receives the digital real and imaginary signal components, estimates ~~the~~ cross-talk interference on the real signal component resulting from energy from the imaginary signal component being induced into the real signal path, estimates cross-talk interference on the imaginary signal component resulting from energy from the real signal component being induced into the imaginary signal path ~~caused by each of the signal components~~, and outputs digital real and imaginary cross-talk compensated signal components.

16. (original): The IC of claim 15 wherein the digital cross-talk compensation module comprises:

(i) a real signal path for receiving the digital real signal component;

(ii) an imaginary signal path for receiving the digital imaginary signal component;

(iii) a first delay unit inserted in the real signal path, the first delay unit for receiving the digital real signal component and outputting the digital real signal component after a first predetermined delay period expires;

(iv) a second delay unit inserted in the imaginary signal path, the second delay unit for receiving the digital imaginary signal component and outputting the digital imaginary signal component after a second predetermined delay period expires;

(v) a first adder for adding a real cross-talk compensation signal to the delayed digital real signal component output by the first delay unit; and

(vi) a second adder for adding an imaginary cross-talk compensation signal to the delayed digital imaginary signal component output by the second delay unit.

17. (original): The IC of claim 16 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

18. (original): The IC of claim 15 wherein the digital cross-talk compensation module comprises:

(i) a real signal path for receiving the digital real signal component;

(ii) a delay unit coupled to the real signal path for receiving the digital real signal component and outputting the digital real signal component after a predetermined delay period expires;

(iii) an adder coupled to the real signal path and to the delay unit, the adder for adding a negative value of the digital real signal component to the delayed

digital real signal component output by the delay unit to generate a first resulting signal; and

(iv) a multiplier coupled to the adder for multiplying the first resulting signal with a compensation signal having a predetermined value (K_1) to generate a second resulting signal used for adjusting the digital real signal component to compensate for distortion due to the occurrence of cross-talk between the analog real and imaginary signal components.

19. (original): The IC of claim 18 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.

20. (original): The IC of claim 15 wherein the digital cross-talk compensation module comprises:

(i) an imaginary signal path for receiving the digital imaginary signal component;

(ii) a delay unit coupled to the imaginary signal path for receiving the digital imaginary signal component and outputting the digital imaginary signal component after a predetermined delay period expires;

(iii) an adder, coupled to the imaginary signal path and to the first delay unit, the adder for adding a negative value of the digital imaginary signal component to the delayed digital imaginary signal component output by the delay unit to generate a first resulting signal; and

(iv) a multiplier coupled to the adder for multiplying the first resulting signal with a compensation signal having a predetermined value (K_2) to generate a second resulting signal used for adjusting the digital imaginary signal component to

compensate for distortion due to the occurrence of cross-talk between the analog real and imaginary signal components.

21. (original): The IC of claim 20 further comprising:

(d) a controller in communication with the ADC and the digital cross-talk compensation module.